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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			ALI, SYED J	
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			2127	3

DATE MAILED: 04/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/761,404

Applicant(s)

STEENSGAARD, BJARNE

Examiner

Syed J Ali

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2001.
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-51 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 16 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-51 are pending in this application.

Claim Objections

2. Claims 1-2, 5, 17-23, and 35-39 are objected to because of the following informalities:

Claims 1-2, 17-23, and 35-39 recite the limitation “computer process” in several instances. It is Examiner’s understanding that the claimed “computer process” could also be categorized as a “computer implemented method”. The latter phrasing is preferable since a “computer process” could be construed as a process scheduled for execution on a computer system.

In line of claim 5, “target program” should read “the target program”.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 recites the limitation “the allocation parameter” in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-6, 15-26, 31-32, and 34-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Jagannathan et al. (USPN 5,692,193) (hereinafter Jagannathan).

As per claim 1, Jagannathan teaches the invention as claimed, including a computer program product encoding a computer program for executing on a computer system a computer process for managing allocation of program data in a target program between one or more thread-specific heaps and at least one shared heap, the program data including thread-specific data and shared data, the computer process comprising:

analyzing the target program to distinguish between the thread-specific data of a first program thread and the shared data (col. 10 lines 21-35);

configuring the target program to allocate the thread-specific data of the first program thread to a first thread-specific heap, responsive to the analyzing operation (col. 20 line 56 - col. 21 line 26); and

configuring the target program to allocate the shared data to the shared heap, responsive to the analyzing operation (col. 21 lines 27-57).

As per claim 2, Jagannathan teaches the invention as claimed, including the computer program product of claim 1 wherein the analyzing operation comprises analyzing the target program to distinguish among the thread-specific data of the first program thread, the thread-specific data of a second program thread, and the shared data (col. 20 line 56 - col. 21 line 57), and wherein the computer process further comprises:

configuring the target program to allocate the thread-specific data of the second program thread to a second thread-specific heap, responsive to the analyzing operation (col. 20 line 56 - col. 21 line 26).

As per claim 3, Jagannathan teaches the invention as claimed, including the computer program product of claim 1 wherein the analyzing operation comprises:

identifying program data in the target program as the thread-specific data of the first program thread, if the program data is not referenced by any other program thread of the target program (col. 21 lines 7-26).

As per claim 4, Jagannathan teaches the invention as claimed, including the computer program product of claim 1 wherein the analyzing operation comprises:

identifying program data in the target program as the thread-specific data of the first program thread based on a thread escape analysis (col. 21 lines 38-57).

As per claim 5, Jagannathan teaches the invention as claimed, including the computer program product of claim 1 wherein target program further includes a second program thread and the analyzing operation comprises:

identifying program data in the target program as the shared data, if the program data is referenced by the first program thread and the second program thread of the target program (col. 21 lines 27-37).

As per claim 6, Jagannathan teaches the invention as claimed, including the computer program product of claim 1 wherein the analyzing operation occurs prior to the execution of the target program (col. 10 lines 21-35).

As per claim 15, Jagannathan teaches the invention as claimed, including the computer program product of claim 1 wherein the operation of configuring the target program to allocate the thread-specific data occurs prior to execution of the target program (col. 14 lines 5-53).

As per claim 16, Jagannathan teaches the invention as claimed, including the computer program product of claim 1 wherein the operation of configuring the target program to allocate the shared data occurs prior to execution of the target program (col. 14 lines 5-53).

As per claim 17, Jagannathan teaches the invention as claimed, including the computer program of claim 1 wherein the computer process further comprises:

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garbage collecting the thread-specific data from the first thread-specific heap independently of garbage collection of the shared data in the shared heap (col. 21 lines 7-26).

As per claim 18, Jagannathan teaches the invention as claimed, including the computer program of claim 1 wherein the computer process further comprises:

garbage collecting the thread-specific data from the first thread-specific heap independently of garbage collection of a second thread-specific heap (col. 21 lines 7-26).

As per claim 19, Jagannathan teaches the invention as claimed, including the computer program of claim 1 wherein the computer process further comprises:

garbage collecting the thread-specific data from the first thread-specific heap independently of the execution of another program thread in the target program (col. 21 lines 7-26).

As per claim 20, Jagannathan teaches the invention as claimed, including the computer program of claim 1 wherein the computer process further comprises:

garbage collecting the shared data from the shared heap independently of garbage collection of the thread-specific data in the first thread-specific heap (col. 21 line 66 - col. 22 line 20).

As per claim 21, Jagannathan teaches the invention as claimed, including the computer program of claim 1 wherein the computer process further comprises:

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maintaining a remembered set identifying references to one or more shared data in the shared heap (col. 21 line 66 - col. 22 line 20); and

collecting the shared heap independently of garbage collection of the first thread-specific heap (col. 21 line 66 - col. 22 line 20).

As per claim 22, Jagannathan teaches the invention as claimed, including the computer program product of claim 1 wherein the computer process further comprises:

collecting a portion of the shared data from the shared heap to leave an uncollected portion of the shared data in the shared heap, the uncollected portion of the shared data including shared data that is referenced by thread-specific data of the first thread-specific heap that has not yet been scanned (col. 22 lines 12-20);

scanning the thread-specific data from the first thread-specific heap, responsive to the operation of collecting a portion of the shared data (col. 22 lines 12-20); and

collecting the uncollected portion of the shared data from the shared heap, responsive to the scanning operation (col. 22 lines 12-20).

As per claim 23, Jagannathan teaches the invention as claimed, including the computer program product of claim 22 wherein the computer process further comprises:

collecting the thread-specific data from the first thread-specific heap, responsive to the operation of collecting a portion of the shared data (col. 21 lines 38-57).

As per claim 24, Jagannathan teaches the invention as claimed, including the computer program product of claim 1 wherein the shared heap is shared by a subset of the program threads of the target program (col. 12 line 66 - col. 13 line 22), wherein the subset of program threads includes less than all of the program threads of the target program (col. 12 line 66 - col. 13 line 22).

As per claim 25, Jagannathan teaches the invention as claimed, including a method of allocating of program data in a target program between one or more thread-specific heaps and at least one shared heap, the program data including thread-specific data and shared data, the method comprising:

analyzing the target program to distinguish between the thread-specific data of a first program thread and the shared data (col. 10 lines 21-35);

configuring the target program to allocate the thread-specific data of the first program thread to a first thread-specific heap, responsive to the analyzing operation (col. 20 line 56 - col. 21 line 26); and

configuring the target program to allocate the shared data to the shared heap, responsive to the analyzing operation (col. 21 lines 27-57).

As per claim 26, Jagannathan teaches the invention as claimed, including the method of claim 25 wherein target program further includes a second program thread and the analyzing operation comprises:

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identifying program data in the target program as the shared data, if the program data is referenced by the first program thread and the second program thread of the target program (col. 21 lines 27-37).

As per claim 31, Jagannathan teaches the invention as claimed, including the method of claim 25 further comprising:

collecting a portion of the shared data from the shared heap to leave an uncollected portion of the shared data in the shared heap, the uncollected portion of the shared data including shared data that is referenced by thread-specific data of the first thread-specific heap that has not yet been scanned (col. 22 lines 12-20);

scanning the thread-specific data from the first thread-specific heap, responsive to the operation of collecting a portion of the shared data (col. 22 lines 12-20); and

collecting the uncollected portion of the shared data from the shared heap, responsive to the scanning operation (col. 22 lines 12-20).

As per claim 32, Jagannathan teaches the invention as claimed, including the method of claim 31 further comprising:

collecting the thread-specific data from the first thread-specific heap, responsive to the operation of collecting a portion of the shared data (col. 21 lines 38-57).

As per claim 34, Jagannathan teaches the invention as claimed, including a compiler for managing allocation of program data of a target program between a shared heap and a

thread-specific heap, the program data including thread-specific data and shared data, the compiler comprising:

a program analyzer analyzing the target program to distinguish between the threads specific data of a first program thread and the shared data (col. 10 lines 21-35); and

a code specializer configuring the target program to allocate the thread-specific data of the first program thread to a first thread-specific heap (col. 20 line 56 - col. 21 line 26) and configuring the target program to allocate the shared data to the shared heap, responsive to the analyzing operation (col. 21 lines 27-57).

As per claim 35, Jagannathan teaches the invention as claimed, including a computer program product encoding a computer program for executing on a computer system a computer process for managing memory used for program data in a target program having one or more thread-specific heaps and at least one shared heap, the program data including thread-specific data and shared data, the computer process comprising:

allocating thread-specific data associated with a first program thread of the target program to a first thread-specific heap, the thread-specific data being determined to be reachable only by the first thread (col. 20 line 56 - col. 21 line 26); and

allocating the shared data to the shared heap, the shared data being deemed potentially reachable by a plurality of the program threads of the target program (col. 21 lines 27-57).

As per claim 36, Jagannathan teaches the invention as claimed, including the computer program of claim 35 wherein the computer process further comprises:

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garbage collecting the thread-specific data from the first thread-specific heap independently of garbage collection of the shared data in the shared heap (col. 21 lines 7-26).

As per claim 37, Jagannathan teaches the invention as claimed, including the computer program of claim 35 wherein the computer process further comprises:

garbage collecting the thread-specific data from the first thread-specific heap independently of the execution of another program thread in the target program (col. 21 lines 7-26).

As per claim 38, Jagannathan teaches the invention as claimed, including the computer program of claim 35 wherein the computer process further comprises:

garbage collecting the shared data from the shared heap independently of garbage collection of the thread-specific data in the first thread-specific heap (col. 21 line 66 - col. 22 line 20).

As per claim 39, Jagannathan teaches the invention as claimed, including the computer program of claim 35 wherein the computer process further comprises:

maintaining a remembered set identifying references to one or more shared data in the shared heap (col. 21 line 66 - col. 22 line 20); and

collecting the shared heap independently of garbage collection of the first thread-specific heap, based on the references identified in the remembered set (col. 21 line 66 - col. 22 line 20).

As per claim 40, Jagannathan teaches the invention as claimed, including a method of managing memory used for program data in a target program having one or more thread-specific heaps and at least one shared heap, the program data including thread-specific data and shared data, the method comprising:

allocating thread-specific data associated with a first program thread of the target program to a first thread-specific heap, the thread-specific data being determined to be reachable only by the first thread (col. 20 line 56 - col. 21 line 26); and

allocating the shared data to the shared heap, the shared data being deemed potentially reachable by a plurality of the program threads of the target program (col. 21 lines 27-57).

As per claim 41, Jagannathan teaches the invention as claimed, including the method of claim 40 further comprising:

garbage collecting the thread-specific data from the first thread-specific heap independently of garbage collection of the shared data in the shared heap (col. 21 lines 7-26).

As per claim 42, Jagannathan teaches the invention as claimed, including the method of claim 40 further comprising:

garbage collecting the thread-specific data from the first thread-specific heap independently of the execution of another program thread in the target program (col. 21 lines 7-26).

As per claim 43, Jagannathan teaches the invention as claimed, including the method of claim 40 further comprising:

garbage collecting the shared data from the shared heap independently of garbage collection of the thread-specific data in the first thread-specific heap (col. 21 line 66 - col. 22 line 20).

As per claim 44, Jagannathan teaches the invention as claimed, including the method of claim 40 further comprising:

maintaining a remembered set identifying, references to one or more shared data in the shared heap (col. 21 line 66 - col. 22 line 20); and

collecting the shared heap independently of garbage collection of the first thread-specific heap, based on the remembered set (col. 21 line 66 - col. 22 line 20).

As per claim 45, Jagannathan teaches the invention as claimed, including the method of claim 40 further comprising:

collecting a portion of the shared data from the shared heap to leave an uncollected portion of the shared data in the shared heap, the uncollected portion of the shared data including shared data that is referenced by thread-specific data of the first thread-specific heap that has not yet been scanned (col. 22 lines 12-20);

scanning the thread-specific data from the first thread-specific heap, responsive to the operation of collecting a portion of the shared data (col. 22 lines 12-20); and

collecting the uncollected portion of the shared data from the shared heap, responsive to the scanning operation (col. 22 lines 12-20).

As per claim 46, Jagannathan teaches the invention as claimed, including the method of claim 45 further comprising:

collecting the thread-specific data from the first thread-specific heap, responsive to the operation of collecting a portion of the shared data (col. 21 lines 38-57).

As per claim 47, Jagannathan teaches the invention as claimed, including a memory manager for managing heap memory in a computer system, the heap memory being used to store program data, the program data including thread-specific data and shared data, the memory manager comprising:

an allocation module allocating thread-specific data associated with a first program thread of the target program to a first thread-specific heap, the thread-specific data being determined to be reachable only by the first thread (col. 20 line 56 - col. 21 line 26), and allocating the shared data to the shared heap, the shared data being deemed potentially reachable by a plurality of the program threads of the target program (col. 21 lines 27-57).

As per claim 48, Jagannathan teaches the invention as claimed, including the memory manager of claim 47 further comprising:

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a garbage collector reclaiming memory associated with the thread-specific data from the first thread-specific heap independently of garbage collection of the shared data in the shared heap (col. 21 lines 7-26).

As per claim 49, Jagannathan teaches the invention as claimed, including the memory manager of claim 47 further comprising:

a garbage collector reclaiming memory associated with the thread-specific data from the first thread-specific heap independently of the execution of another program thread in the target program (col. 21 lines 7-26).

As per claim 50, Jagannathan teaches the invention as claimed, including the memory manager of claim 47 further comprising:

a garbage collector reclaiming memory associated with the shared data from the shared heap independently of garbage collection of the thread-specific data in the first thread-specific heap (col. 21 line 66 - col. 22 line 20).

As per claim 51, Jagannathan teaches the invention as claimed, including the memory manager of claim 47 wherein the memory manager maintains a remembered set identifying references to one or more shared data in the shared heap (col. 21 line 66 - col. 22 line 20) and further comprising:

a garbage collector reclaiming memory associated with the shared heap independently of garbage collection of the first thread-specific heap, based on the remembered set (col. 21 line 66 - col. 22 line 20).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 7-14, 27-30, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jagannathan in view of Benayon et al. (USPN 5,809,554) (hereinafter Benayon).

As per claim 7, Benayon teaches the invention as claimed, including the computer program product of claim 1 wherein the operation of configuring the target program to allocate the thread-specific data comprises:

replacing an original allocation instruction in the target program with a new instruction that allocates the thread-specific data of the first program thread to the first thread-specific heap associated with the first program thread (col. 2 lines 53-58; col. 9 line 25 - col. 10 line 29).

It would have been obvious to one of ordinary skill in the art to combine Jagannathan and Benayon since dynamic changes in an execution context may require different allocation parameters depending on current conditions. Jagannathan is limited in this respect since the

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programming environment disclosed, Sting, is built on top of a sequential programming language, Scheme, that compiles and executes without modification (col. 10 lines 21-35). Although source level modifications to code cannot be made, Benayon provides a way of transparently modifying the allocation parameters of a thread such that heap allocation can be controlled if a user desires. After the resources are allocated for a specific thread, the allocation parameters return to the default. This achieves the claimed result of providing control over allocating data to the thread-specific heap or shared heap in a manner that maintains the integrity of the original source code.

As per claim 8, Benayon teaches the invention as claimed, including the computer program product of claim 1 wherein the operation of configuring the target program to allocate the thread-specific data comprises:

leaving an original allocation instruction in the target program to allocate the thread-specific data of the first program thread to the first thread-specific heap associated with the first program thread (col. 2 lines 53-58; col. 9 line 25 - col. 10 line 29).

As per claim 9, Benayon teaches the invention as claimed, including the computer program product of claim 1 wherein the operation of configuring the target program to allocate the shared data comprises:

leaving an original allocation instruction in the target program to allocate the shared data to the shared heap (col. 2 lines 53-58; col. 9 line 25 - col. 10 line 29).

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As per claim 10, Benayon teaches the invention as claimed, including the computer program product of claim 1 wherein the operation of configuring the target program to allocate the shared data comprises:

replacing an original allocation instruction in the target program with a new instruction that allocates the shared data to the shared heap (col. 2 lines 53-58; col. 9 line 25 - col. 10 line 29).

As per claim 11, Benayon teaches the invention as claimed, including the computer program product of claim 1 wherein the operation of configuring the target program to allocate the thread-specific data comprises:

configuring an allocation parameter associated with the thread-specific data indicating that the thread-specific data of the first program thread is to be allocated in the one of the thread-specific heaps (col. 2 lines 53-58; col. 9 line 25 - col. 10 line 29).

As per claim 12, Benayon teaches the invention as claimed, including the computer program product of claim 1 wherein the operation of configuring the target program to allocate the thread-specific data further comprises:

allocating the thread-specific data of the first program thread to the first thread-specific heap associated with the first program thread, responsive to the allocation parameter (col. 2 lines 53-58; col. 9 line 25 - col. 10 line 29).

As per claim 13, Benayon teaches the invention as claimed, including the computer program product of claim 1 wherein the operation of configuring the target program to allocate the shared data comprises:

configuring an allocation parameter associated with the shared data indicating that the shared data is to be allocated in the shared heap (col. 2 lines 53-58; col. 9 line 25 - col. 10 line 29).

As per claim 14, Benayon teaches the invention as claimed, including the computer program product of claim 13 wherein the operation of configuring the target program to allocate the shared data further comprises:

allocating the shared data to the shared heap, responsive to the allocation parameter (col. 2 lines 53-58; col. 9 line 25 - col. 10 line 29).

As per claim 27, Benayon teaches the invention as claimed, including the method of claim 25 wherein the operation of configuring the target program to allocate the thread-specific data comprises:

replacing an original allocation instruction in the target program with a new instruction that allocates the thread-specific data of the first program thread to the first thread-specific heap associated with the first program thread (col. 2 lines 53-58; col. 9 line 25 - col. 10 line 29).

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As per claim 28, Benayon teaches the invention as claimed, including the method of claim 25 wherein the operation of configuring the target program to allocate the thread-specific data comprises:

leaving an original allocation instruction in the target program to allocate the thread-specific data of the first program thread to the first thread-specific heap associated with the first program thread (col. 2 lines 53-58; col. 9 line 25 - col. 10 line 29).

As per claim 29, Benayon teaches the invention as claimed, including the method of claim 25 wherein the operation of configuring the target program to allocate the shared data comprises:

replacing an original allocation instruction in the target program with a new instruction that allocates the shared data to the shared heap (col. 2 lines 53-58; col. 9 line 25 - col. 10 line 29).

As per claim 30, Benayon teaches the invention as claimed, including the method of claim 25 wherein the operation of configuring the target program to allocate the shared data comprises:

leaving an original allocation instruction in the target program to allocate the shared data to the shared heap (col. 2 lines 53-58; col. 9 line 25 - col. 10 line 29).

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As per claim 33, Benayon teaches the invention as claimed, including the method of claim 25 wherein the operation of configuring the target program to allocate the thread-specific data comprises:

configuring an allocation parameter associated with the thread-specific data indicating that the thread-specific data of the first program thread is to be allocated in the first thread-specific heap (col. 2 lines 53-58; col. 9 line 25 - col. 10 line 29).

Conclusion


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J Ali whose telephone number is (703) 305-8106. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T An can be reached on (703) 305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Syed Ali
April 13, 2004



MENG-AI T. AN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100